Notice of Allowability	Application No.	Applicant(s)
	10/037,040	MCDANIEL ET AL.
	Examiner	Art Unit	
	Benjamin Buss	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *papers filed by Applicant entered 12/11/2006 and the interview held 3/14/2007*.

2. ☒ The allowed claim(s) is/are *1-2, 4-8, 10-12, 14-18, 20, & 22-39* .

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.

    (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
    Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *20070313* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____.

Anthony Knight
Supervisory Patent Examiner
Group 3600

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Edward Meisarosh (Reg. No. 57,463) on 3/14/2007.

The application has been amended such that claims 18, 23, 31, 33, 35, & 38 now read as follows:

Claim 18:

An apparatus for retrieving an attribute associated with a data packet comprising a search object using a decision tree structure comprising a plurality of search nodes defining a plurality of paths through the decision tree structure, at least one path comprising a plurality of search nodes, one or more joining links between adjacent search nodes, and a leaf, said apparatus comprising:

a first memory for storing a first portion of the decision tree structure, the first memory having a first memory access time;

a second memory for storing a second portion of the decision tree structure, the second memory having a second memory access time wherein the first memory access time is less than the second memory access time; and

a processor for retrieving the attribute associated with the data packet by implementing one or more times, starting with a root search node in the first memory, the steps of:

(1) reading at least a portion of one or more paths through a current search node from one of the first memory and the second memory;

(2) comparing, at the current search node, at least a portion of the search object with the at least a portion of the one or more paths through the current search node; and

(3) based on a result of the step of comparing, traversing a search path from the current search node to: (i) a next search node via the joining link therebetween, or (ii) a leaf,

wherein the search path terminates at the leaf.

Claim 23:

An apparatus for retrieving an attribute associated with a data packet comprising a search object using a decision tree structure comprising a plurality of paths through the decision tree structure, at least one path comprising a plurality of search nodes, one or more joining links between adjacent search nodes, and a leaf, said apparatus comprising:

a first processor for accessing a first memory;

a second processor for accessing a second memory;

the first memory having a first memory access time and for storing a first portion of the decision tree structure; and

the second memory having a second memory access time and for storing a second portion of the decision tree structure wherein the first memory access time is less than the second memory access time,

wherein said first processor and said second processor are for retrieving the attribute associated with the data packet by implementing one or more times, starting with a root search node in the first memory, the steps of:

(1) reading at least a portion of one or more paths through a current search node from one of the first memory and the second memory;

(2) comparing, at the current search node, at least a portion of the search object with the at least a portion of the one or more paths through the current search node;

(3) based on a result of the step of comparing, traversing a search path from the current search node to: (i) a next search node via the joining link therebetween, or (ii) a leaf,

wherein the search path terminates at the leaf.

Claim 31:

Apparatus comprising:

a first memory for storing a first portion of a decision tree structure, the first memory having a first access time;

a second memory for storing a second portion of the decision tree structure, the second memory having a second access time greater than the first access time; and

at least one processor for traversing a search path in the decision tree structure corresponding to a specified search object, wherein:

the specified search object comprises (1) a first part contained in the first portion of the decision tree structure and (2) a second part contained in the second portion of the decision tree structure; and

the at least one processor traverses (1) a first part of the search path by accessing the first memory to identify the first part of the specified search object and (2) a second part of the search path by accessing the second memory to identify the second part of the specified search object.

Claim 33:

The invention of claim 31, further comprising a third memory for storing the first portion of the decision tree structure, the third memory having a third access time different from the second access time, wherein the at least one processor comprises:

a first processor for traversing a first search path in the decision tree structure corresponding to a first specified search object, wherein:

the first specified search object comprises (1) a first part contained in the first portion of the decision tree structure and (2) a second part contained in the second portion of the decision tree structure; and

the first processor traverses (1) a first part of the first search path by accessing the first memory to identify the first part of the first specified search object and (2) a second part of the first search path by accessing the second memory to identify the second part of the first specified search object; and

a second processor for traversing a second search path in the decision tree structure corresponding to a second specified search object, wherein:

the second specified search object comprises (1) a first part contained in the first portion of the decision tree structure and (2) a second part contained in the second portion of the decision tree structure; and

the second processor traverses (1) a first part of the second search path by accessing the third memory to identify the first part of the second specified search object and (2) a second part of the second search path by accessing the second memory to identify the second part of the second specified search object.

Claim 35:

The invention of claim 31, wherein the at least one processor comprises:

a first processor for traversing the first part of the search path by accessing the first memory to identify the first part of the specified search object; and

a second processor for traversing the second part of the search path by accessing the second memory to identify the second part of the specified search object.

Claim 38:

The invention of claim 31, wherein the at least one processor comprises a first processor for accessing simultaneously (1) the first portion of the decision tree structure in the first memory and (2) the second portion of the decision tree structure in the second memory.

Reasons for Allowance

Claims 1-2, 4-8, 10-12, 14-18, 20, & 22-39 are considered allowable since when reading the claims in light of the specification, as per MPEP §2111.01 or In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983), none of the references of record alone or in combination disclose or suggest the combination of limitations specified in the independent claims including retrieving attributes for a data packet by searching with a decision tree such that a first portion of the decision tree is stored on a first memory having a faster access time than that of a second memory on which a second portion of the decision tree is stored (supported at e.g., pg. 9, lines 10-28), as specified in claims 1, 18, 23, and 31.

The closest prior art (Bennet USPN 5,813,001; Ahuja USPN 5,946,679) teach decision trees for accessing memory addresses across memory and for routing data packets to the proper destinations. The prior art (Wilson USPN 6,839,739) teaches dynamic page placement considering that memory remote from the processor has a longer access time than memory local to the processor. The prior art fails to provide any teaching, suggestion, or motivation for dividing a decision tree across memories specifically known to have faster and slower access times, the decision tree used to retrieve attributes for data packets, as in the claimed invention. The claimed invention improves the time needed for search and retrieval of data packet attributes by efficiently using memory such that some portions of the tree may be searched faster than others (supported at e.g. pg. 9, line 29 – pg. 10, line 28).

The Examiner was persuaded by the arguments filed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin Buss whose telephone number is 571-272-5831. The examiner can normally be reached on M-F 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Benjamin Buss
Examiner
Art Unit 2129

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3/29/07
DAVID VINCENT
SUPERVISORY PATENT EXAMINER